

Audio Research Foundation DAC 9 digital converter

by Alan Sircom

A few years ago, Audio Research began to introduce a series of design changes to both the interior and exterior of its products, starting with the G-Series. The initial development was very much a high-end prospect, as the changes stretched to the Reference range, but now in the new Foundation models, the sea-change in performance and style reaches down to the attainable.

The Foundation Series – the original three models of DAC, phono preamp, and line stage, now joined by a power amplifier – was launched last year as effectively a replacement to Audio Research's traditional core lines (although models like the CD6, the LS27, and the SP20 remain in the catalogue at this time). This not only ultimately results in a simplification of the line – Foundation for the entry-level, G-Series for the more lifestyle-oriented clientele, Reference for the top-end – it represents a more obvious trickle-down (and in some cases, trickle-up) engineering development concept: design and technology aspects are passed from product line to product line. To a certain extent, 'twas ever thus at Audio Research, but the current product lines have a closer relationship to one another at the design level.

However, this puts the Foundation DAC 9 in an odd position at Audio Research. As we go to press, it's the cheapest standalone digital source in the line at the moment, but it's also the newest, and the best of the bunch. The 'as we go to press' point is crucial, as there is a strong possibility of a replacement to the Reference series DAC any day now, and much of the product development that went into the DAC 9 will filter up into that top-end digital product.

From the outside at least, the DAC 9 is very much a conventional digital to analogue converter, eschewing both streaming and headphone amplification to concentrate on that one job of converting digital music sources to line-level analogue audio signals for an amplifier or preamplifier. Instead, the DAC 9 supports USB 2.0 (type B input), alongside RCA, BNC, and Toslink S/PDIF connections, and even an AES/EBU XLR input, all of which are galvanically isolated from the main circuit. It also largely skips the DSD 'arms race', with

support for 2.8224MHz and 5.6448MHz DSD files natively, but ignoring 'quad DSD' on pragmatic lines, because of the paucity of quad DSD files available or likely to be available.

In fact, the DAC 9 could be considered two DACs in one, as it has two entirely different digital pathways depending on the input signal. Unpacked DoP files are passed through a dedicated serial DSD music file path, while PCM decoding to 24-bit, 384kHz precision is given its own PCM-only digital pathway. The two digital datastreams only converge after conversion and filtering in the analogue domain at the valve-based output stage. Both pathways use a pair of dedicated mono DACs, and the PCM pathway uses a pair of TCXO crystal oscillators; one for multiples of 44.1kHz, the other for multiples of 48kHz. The former is used to improve dynamic range, while the latter means no interpolation distortion errors (as an example for Mac users, try listening to the difference in quality of your ripped 16-bit, 44.1kHz CD files when transcoded to 48kHz by Audio MIDI Setup).

Audio Research is perhaps one of the last of the 'majors' to use valves in a digital product (there are still many brands that make DACs with valve outputs, but few – apart from Nagra – have Audio Research's following or market significance), and the DAC 9 features one 6H30 per side. This 'super tube' from Russia is not much larger than the popular 6922, but has low plate resistance and no cathode follower, and its high transconductance means a single 6H30 can do the job of a bank of 6922s. The result is a more reliable, lower noise, and ultimately more linear output stage, feeding both the RCA single-ended and XLR balanced outputs of the DAC 9. An RS232 connector and IR socket for home automation complete the inputs and outputs.

The DAC has three user options. You can opt for PCM files to be upsampled to either 354.8kHz or 384kHz (depending on input sampling frequency), invert absolute phase, and switch between 'fast' and 'slow' digital roll-off filters. I think the first and last are 'once per system' adjustments, made to taste and the demands of your system (I preferred the sound with upsampling engaged, but with a fast roll-off, though your tastes may be very different). The phase inversion is more *ad*



hoc, and that is interesting in and of itself. Absolute phase is rarely given much consideration in the recording studio and the mastering suite, so whether a recording is in or out of absolute phase is down to sheer luck. In most cases, the digital converter is not resolving enough to make much of a difference, and adjusting absolute phase on a per-recording basis falls into the 'life's too short' dump bin. However, on the DAC 9, absolute phase is extremely easy to hear, putting it on a par with a handful of the very best DACs from the likes of dCS and Nagra. On good recordings that haven't been made with the audiophile-grade anal-retentiveness, try adjusting absolute phase; one way will sound more spacious and yet also more focused than the other. This doesn't mean you need to obsessively log absolute phase on every recording, but that the DAC 9 is resolving enough to make absolute phase more immediately noticeable, and that's a good thing!

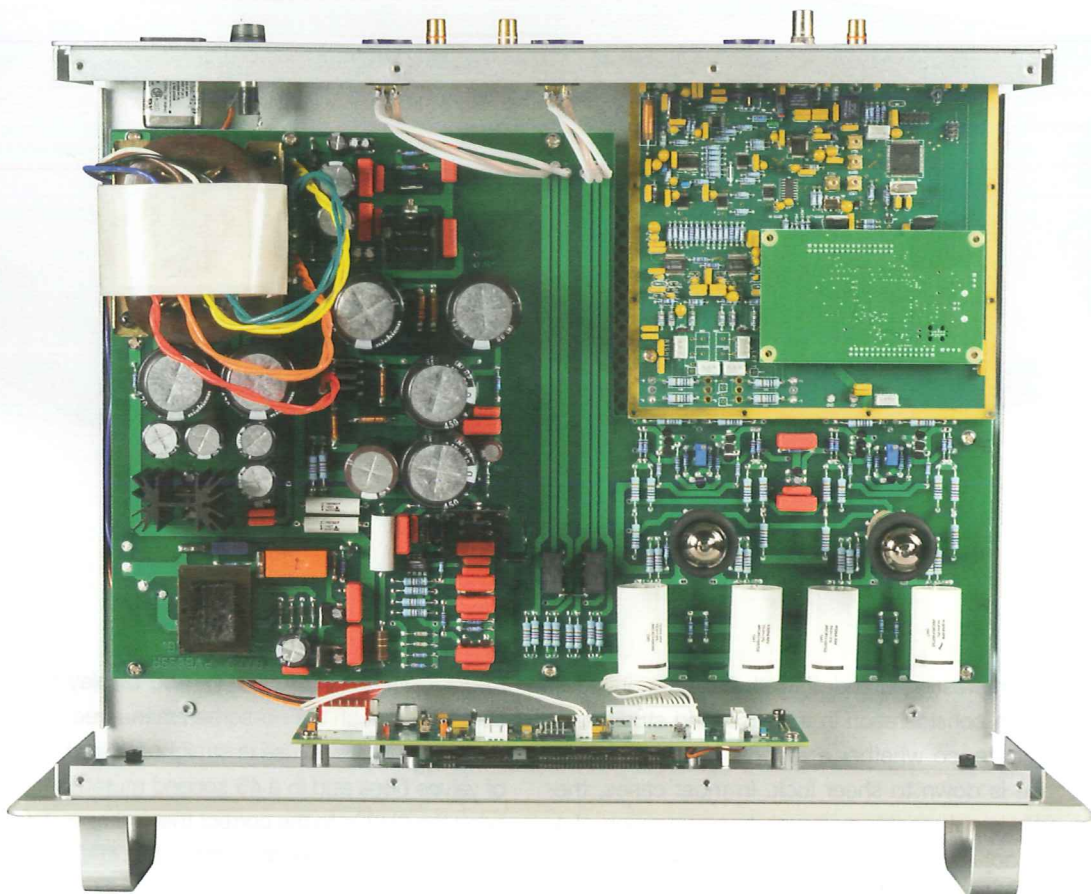
The DAC 9 has a large central display, with an easy-read green fluoro alphanumeric display showing selected input, file type and sampling rate, whether the signal is upsampled or not, filter selection and phase inversion, going deeper through the menus can show the number of hours put on the valve (Audio Research suggests around 4,000 hours between valve changes, and the onus is on the user to reset the tube life indicator, rather than any kind of detector on the valve seats).

Phase inversion, upsampling, and display brightness are all selected through the on-screen menu tree.

Installation and use is straight-forward, although the use of valves does add in a 45 second muted power-up cycle, to bring the 6H30s to the correct thermal operating levels. Audio Research recommends putting the DAC into mute before powering down a system, but this is a logical consequence of people who have a nasty habit of powering down from source to amplifier (instead of the other way round) and hearing some uncomfortable pops and thumps through the loudspeakers. It's an exercise in good practice rather than trying to mask some aspect of the DAC 9's performance. As ever with Audio Research, the supplied manual is an exercise in clarity, without too much extraneous information to confound the new DAC owner.

Downsides are beholden on the outside world, rather than the performance of the DAC 9 itself as it currently stands. Audio Research dipped its toe into the streaming waters a few years ago with the Reference model, and there seems to be no drive to repeat that exercise. Whether that's a limitation or praiseworthy largely depends on your take on streaming. Similarly, whether the absences of MQA and Roon support are a concern or a triviality also depends on your take on MQA and Roon. However, I can't help feeling these

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▶ two features are becoming important inclusions on any digital device, and Audio Research may need to address these features at a later date.

The knee-jerk view of valves in a digital product is somewhat negative, as if the use of valves in the output stage is a kind of rose-tinted filter, designed to make everything sound nice. On the other hand, auditioning the DAC 9 suggests other reasons to go down the valve route; linearity and the kind of authoritative output that is more than just a measure of output impedance. If there is any valve ‘signature’ to the sound of the DAC 9, it’s in the fluidity of the midrange and treble, which have none of the hardness erroneously associated with ‘digital’ reproduction. This is not a warm sounding DAC, neither is it a bright sounding DAC.

It’s a fundamentally ‘right’ sounding DAC, with a profound sense of dynamic authority and image stability that hits home first. Listening to the third movement of Sibelius Symphony No 6 [Søndergård, BBC National Orchestra of Wales, Linn Records], the DAC managed to deftly balance the pace of the movement with the placement of the musicians in three dimensions. This could so easily be a trade-off, either going after the energy of the movement or the spatial properties of the recording. The DAC 9 performs no such trade-off, and gives the listener both the sizzle and the steak!

‘Foundation’ is the right name for this DAC. It’s right because the DAC gets the musical foundations absolutely right; this is a DAC that is both detailed and dynamic, both exciting and authoritative, and both precise and expansive. ▶

“I know this recording backwards, but that detailed articulation made the recording come alive.”

- ▶ It's controlled without sounding restrained. If all of this points to the word 'balanced', I'm doing my job, because this is a design of sophisticated balance without excess or omission.

As you spend more time with the DAC 9, you find yourself drawn to different parts of the music. After that initial sense of authority, you become enthralled by the sense of lyricism and vocal articulation. Listening to 'All I Want' by Joni Mitchell on *Blue* [Reprise] with just her voice supported by that dulcimer is beautifully clear, almost pained, but with those highs that only she could muster. Like many, I know this recording backwards, but that detailed articulation made the recording come alive like it was the first time I'd heard it.

Following swift on the heels of that fluid and accurate midrange comes the deep bass underpinning. Not on Joni Mitchell of course, but stepping up a gear to play 'California Roll' by Snoop Dogg, featuring Stevie Wonder and Pharrell Williams from Snoop Dogg's album *Bush* [Doggy Style]. Far from Snoop Dogg's rap roots, the soulful, relaxed, almost louche beat is underpinned by some good, deep bass and kick drum lines, and a lovely Fender Rhodes sound. As a piece of music, it doesn't really go anywhere, but the journey sounds lovely. And through the DAC 9, the kick drum has some real kick. Not overemphasised (remember, the pivotal word is 'balanced'), just a low thrumming sound that sounds remarkably like a bass drum in tone and depth. Then you also realise the sound has a fine sense of rhythm, too. Once more, 'California Roll' makes a fine case for that rhythmic superiority, because that track's repeated, relaxed rhythm can so easily fall into sounding a little chaotic and bland, but here it just sounds like you should be driving down Rodeo Drive.

If you want to hear a convincing argument for the use of two separate DAC pathways for PCM and DSD, the DAC 9 makes it. The two pathways don't sound materially different – both the digital design and the quality of the analogue output stage prevent that – but each brings its own advantages to the mix. A DSD cut of Led Zeppelin's eponymous debut album of extremely dubious provenance gives a studio-like energy and dynamism that even a copy of the first pressing of the LP cannot replicate. Meanwhile, on the PCM side, transfers of well-recorded CDs and high-res downloads of similar quality deliver the goods in a similar effortlessly dynamic and detailed way.

TECHNICAL SPECIFICATIONS

Type: digital to analogue converter with valve output stage

Tube complement: 2x 6H30 dual triodes

Push buttons: Power, Menu, Option, Enter, Input, Mute

Inputs: USB 2.0, RCA, BNC, Toslink S/PDIF, XLR AES/EBU, RS232, 12V trigger jack

Outputs: Stereo RCA and XLR

Rated outputs: 3.8V RMS Max Balanced; 1.9V max SE (@ 0dB input)

Output impedance: 500 Ohms balanced, 250 Ohms SE

Digital filter: Selectable Fast or Slow algorithms

Upsampling: All Inputs upsample to 384kHz (PCM only)

Digital precision (PCM): to 24bit, 384kHz (USB); to 24 bit, 192kHz (RCA, BNC, XLR), to 24 bit, 96kHz (Toslink)

Digital precision (DSD): DSD, 2x DSD (USB only)

Frequency response: 20Hz–20kHz ±0.15dB; 6Hz–192kHz ±3dB

THD+N: Less than .002% at 2V RMS 1kHz (balanced output)

Signal to noise ratio: >114dB

IMD + noise: 0.001% (SMPTE ratio)

Channel separation: 107dB

Intrinsic jitter: <10ps

Noise: –103dB

Dimensions (WxHxD): 48 x 13.7 x 34.8cm

Weight: 6.3kg

Price: £7,498

Manufactured by: Audio Research Corporation

URL: www.audioresearch.com

Distributed in the UK by: Absolute Sounds

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Audio Research's Foundation Series DAC 9 is the latest in a long line of digital products, in many cases each one better than the last. That tradition is continued in the DAC 9, as this is the best Audio Research digital product that the company has ever made. The combination of a detailed, dynamic, articulate, and accurate musical reproduction coupled with the sense of timbral, tonal, and temporal balance of the product itself makes it a firm Foundation for your music. Highly recommended! +